

Attorney's Docket No.: 06618-733001

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

A new declaration will be provided in due course.

The objection to the specification has been corrected herein by amendment.

The claim objections have been obviated herein by amendment. The objections based on 35 USC 112, first paragraph have also been obviated herein by amendment.

Claims 1, 4, 5, 7-9 and 14-19 stand rejected under 35 USC 102(b) as allegedly being anticipated by Watkins. However, this contention is respectfully traversed for similar reasons to those previously stated; specifically, Watkins teaches only a single membrane electrode assembly.

In the response to arguments, it is respectfully suggested that the quoted portions of Watkins talk in general about a multi-cell structure, but one which is different than what Watkins disclosed. The first cited section at column 2, line 38 is within the background and is describing a typical fuel cell, not the special fuel cell that is described by Watkins. The passage in column 7, line 22 again describes multi-cell arrangements, and describes that or how other multi-cell

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arrangements might work. It never describes that Watkins himself uses a multi-cell arrangements.

In fact, it is clear that Watkins does not have a plurality of electrochemical cells. Claim 1 may define the structure generically but certainly never teaches that there are multiple cells interconnected together. In fact, this is evident from the Watkins figure. Watkins figure shows a flow field which extends between 25-27. This flow field is formed in the elements 15, which can be seen in Figure 1. As Figure 1 shows, Watkins' overall device includes only a single anode and a single cathode. Looking at Figure 1, if one were going to want to add additional fuel cells to it, the width and thickness of the elements 12 and 13 could pose an impediment. How would one end up with those fuel cells voltage and/or current? One might be able to find some clever way to interconnect them, however that way of interconnecting is certainly not described in Watkins. Again, Watkins discloses only a single fuel cell element, and does not disclose any way of interconnecting them.

Claim 1, in contrast, requires a plurality of electrochemical cells arranged in series such that current flows across the membranes. This is equivalent to current flowing from left to right in Figure 1 between multiple membranes which does not occur in Watkins. Claim 1 also requires that each of these plurality of fuel cells includes an anode, a cathode and a

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membrane. Effectively, therefore, this requires multiple anode, multiple cathodes and multiple membranes, not shown in Watkins. Claim 1 also requires an interconnect between the adjacent electrodes. The examiner states that this is carried out by the flow plates of Watkins, however Watkins never teaches that these flow plates interconnect between different elements, simply because Watkins does not teach more than one elements.

Therefore, it is respectfully suggested that all of these claims should be in condition for allowance. Each of these claims requires multiple anode's and multiple cathodes while Watkins discloses only one. The rejection points to discussion of how the prior art may include multiple fuel cells, but finds nothing in Watkins which says that Watkins includes more than one cathode and more than one anode. In fact, Watkins includes a single anode 16, a single cathode 18 and electrolyte 20, see column 4, lines 15-17. Nowhere is there any teaching or suggestion of any more devices. Even if column 7 describes that the system may include another field on the opposite side of the plates apply, this still teaches nothing about interconnecting these two cells.

Multiple claims are alternatively rejected based on Tsukui. Tsukui does teach parallel membranes and does not teach a plurality of electrochemical cells which are connected together. The rejection states that Figure 3 shows such a device, however

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in fact, Figure 3 shows exactly applicant's point. This series connection of the cells is carried out by putting a number of cells into a housing or cell case 31 with positive and negative terminals. This cell case presumably provides some type of interconnection therebetween. However, Tsukui does not teach or suggest the subject matter of claim 1 which requires not only multiple cells, but a plurality of interconnects between the two adjacent electrodes. This housing may somehow connect plurality of laminated cells together with one another, but teaches nothing about an interconnect as claimed.

Upon further review of the language of claim 3, the examiner's point is well taken that Tsukui provides wicking not only to the face of the fuel cell but also to other places. In response, claim 3 has been amended to better emphasize the concept that the fuel is fed only to the edges of the membranes of the electrochemical cell. This may provide a more efficient design, since it enables feeding fuel only to those short edges.

Claims 10-13 have been canceled to obviate the rejections thereto.

Finally, new claim 20 has been added which defines the wicking which is provided only to an edge of the fuel cell. This produces significant advantages as noted above.

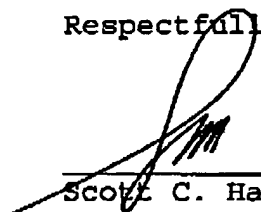
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In view of the above amendments and remarks, therefore, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

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Respectfully submitted,

Date: 7/19/03

  
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Scott C. Harris  
Reg. No. 32,030

Fish & Richardson P.C.

Customer Number: 20985



4350 La Jolla Village Drive, Suite 500

San Diego, CA 92122

Telephone: (858) 678-5070

Facsimile: (858) 678-5099

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